UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,622	08/17/2001	William R. Kowalski	2001-5	6302

7590 08/24/2004

Martin E. Hsia
P. O. Box 939
Honolulu, HI 96808-0939

EXAMINER	
MADSEN, ROBERT A	
ART UNIT	PAPER NUMBER
1761	

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/932,622	KOWALSKI, WILLIAM R.	
	Examiner	Art Unit	
	Robert Madsen	1761	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2004 and 18 May 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *See Continuation Sheet* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13,14,17,18,20,24,25,28-32,36,37,39-55,59-79,81,82,84-89,93-102* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/17/01*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 1-11,13,14,17,18,20,24,25,28-32,36,37,39-55,59-79,81,82,84-89 and 93-102.

DETAILED ACTION

1. Applicant's election without traverse of Group I in the reply filed on April 26, 2004 is acknowledged. With respect the subspecies requirement of the type of seafood, the examiner agrees with applicant that a more appropriate subspecies selection would have been between fish and non-fish seafood. Accordingly, as elected by applicant, the seafood subspecies is understood to be fish-type seafood (such as salmon, tilapia, and tuna) and excludes non-fish seafood (such as lobsters, crabs, claims, oysters, squid and octopus).

2. The Amendment to the claims filed May 18, 2004 has been entered. Claims 93-102 have been added. Claims 12,15,16,19,21-23,26,27,33-35, 38,56-58,80,83,90-92 have been cancelled. Claims 1-11,13,14,17,18,20,24,25,28-32,36,37,39-55,59-79,81,82,84-89,93-102 remain pending in the application.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-11,14,17,20,24,25,29,82,are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Iimura (JP61141835A).

5. See the Derwent Abstract, wherein pressure under water is above 1 atm.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 13,36,37, 41-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iimura (JP61141835A) as applied to claims 1-11,14,17,20,24,25,29,82 above further in view of Ishwata et al.

8. Regarding claims 13,36,37, 41-55, Iimura teaches spraying carbon monoxide into a fish tank so that the fish "breathes" the CO before death in order to retain a vivid red color wherein both COHb and Comb are formed(Abstract), but is silent in teaching any particular type of fish or the required concentration of CO in the fish.

9. Ishwata et al. teach CO addition to fish, such as Tilapia, provides a vivid red color, or bright red color, at levels 47-957µg/kg (Table 2, page 86), as compared to Tilapia at 8µg/kg without CO addition as recited in claims 36, which was cited as a non-treated level of CO, (See Change in concentration of CO during storage from page 87-88, and Figure 2 on page 88). Ishwata et al. also teaches red tuna meat at 20-109 µg/kg and even as high as 643 µg/kg , which all maintained a red color throughout storage (Table 3, Page 87, column 2,

paragraph 2 See Change in concentration of CO during storage from page 87-88, and Figure 2 on page 88).

10. Therefore, it would have been obvious to modify Iimura and select tilapia as recited in claims 13,36,37, 42, 49,51-55 since Ishwata et al. teach tilapia treated with CO will provide a vivid red color, and one would have been substituting on conventional fish for another that maintains a vivid red color during after treatment with CO. It would have been further obvious to provide sufficient CO in the water of Iimura such that the concentration of CO in the flesh is 47-957μg/kg as recited in claims 49,51-55, which is 5.9 to 119.6 times the non-treated amount as recited in claims 36,37,42,since Iimura desires a vivid red color and Ishwata et al. teach that tilapia flesh is bright red at those concentrations. It also would have been further obvious to select a concentration between 7.7 and 40μg/kg, as recited in claims 50, or 1.1-3.99 times the concentration in untreated meat as recited in claim 41, since Ishwata et al. teach the range of 13-47μg/kg is where one finds the transition point from brown to red and selecting a concentration within this range would allow one of ordinary skill in the art to establish the minimum level of CO required for the desired vivid red so that one could minimize the amount of CO used per fish treatment , making the treatment more cost effective. It also would have been obvious to modify Iimura and select tuna as recited in claim 13 and include sufficient CO such that there is 20-109 μg CO/kg flesh as recited in claims 43-46, or even as high as 643 μg/kg as recited in claims 47 and 48, since Ishwata et al. teach tuna containing 20-109

µg CO/kg flesh and as high as 643 µg/kg stays red and does not brown during storage.

11. Claims 28,30-32,39, 40, 59-79,81,84-89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iimura (JP61141835A) as applied to claims 1-11,14,17,20,24,25,29,82 above further in view of Ishwata et al. and Holeton.

12. Regarding claims 28, 30,31, 39, 59, 78,79,81,84-89, Iimura teaches spraying carbon monoxide into a fish tank so that the fish "breathes" the CO before death in order to retain a vivid red color (Abstract), but is silent in teaching any particular type of concentration of CO, time of treatment, or CO absorption rate.

13. Holeton teaches CO intake in fish (trout) when CO is added to the water. The parameters which affect CO intake include the temperature of the water, the time exposed to the CO, the rate at which a fish "breathes" the CO into the blood stream via the gills, and the heart rate at which a fish circulates blood through the body. For trout in particular a concentration of 5% CO was sufficient to form over 90% COHb (See Discussion and Summary on Pages 248-253).

14. Ishwata et al. teach CO at levels of 47-957µg/kg in Tilapia provides a vivid red color, or bright red color, (Table 2, page 86, See Change in concentration of CO during storage from page 87-88, and Figure 2 on page 88). Ishwata et al. also teaches red tuna meat at 20-109 µg/kg, and even as high as 643 µg/kg , maintained a red color throughout storage (Table 3, Page 87, column 2, paragraph 2 See Change in concentration of CO during storage from page 87-88, and Figure 2 on page 88).

15. Therefore, to modify Iimura and select any particular concentration of CO in the water , time of treatment, or CO absorption rate, as recited 28, 30,31, 39, 59, 78,79,81,84-89, would have been an obvious result effective variable of (1) the temperature of the water, (2) the rate at which a fish "breathes" the CO into the blood stream via the gills, and (3) the heart rate at which a fish circulates blood through the body, since Holeton teaches these variables each affect the concentration of CO in the flesh of a fish at a given moment and that for trout about 5% CO results in over 90% COHb, while Ishwata et al. teach CO concentrations to maintain a red color during storage include 47-957μg/kg in tilapia and 20-109 μg/kg for tuna.

16. Regarding claim 32, although Iimura is silent in teaching the COHb initially increases, followed by decreasing, it is notoriously well known that systems move toward a state of equilibrium. Based on this principle, once the blood becomes saturated with CO and has a concentration of CO greater than that of the intake water, the excess CO would naturally transfer to the water from the blood.

17. Regarding claim 40, Iimura is silent in teaching any particular relation between COHb, time, ventilation, cardiac output and body weight. As discussed previously, Holeton teaches the parameters which affect CO intake include the temperature of the water, the time exposed to the CO, the rate at which a fish "breathes" the CO into the blood stream via the gills, the heart rate at which a fish circulates blood through the body, and even describes on pages 246-248 the various equations correlating ventilation volume and cardiac output in terms of OHb and COHb wherein about 5% CO results in over 90% COHb within 30

minutes. Therefore, it would have been obvious to use a mathematical expression to determine the value of COHb since Iimura is interested in converting to COHb and Holeton teaches various equations relating volume ventilation and cardiac output rate, as well as the correlation of OHb to COHb, teaches greater than 90% COHb using 5% CO in 30 minutes. Furthermore such a formula would allow one to predict when treatment is finished without the use of excessive CO.

18. Regarding claims 60-77, as discussed above in paragraphs 7-9 Iiuma teaches both COMb and COHb are formed, Ishwata et al. teach the recited levels of CO in the flesh as recited in claims 60-71, but modified Iiuma is silent in teaching the particular levels of CO in the blood, as recited in claims 60-71,or the COHb to COMb ratio as recited in claims 72-77. However, as discussed above in paragraph 13, Holeton teaches CO intake in fish (trout) depends on the temperature of the water, the time exposed, the rate at which a fish "breathes" the CO into the blood stream via the gills, and the heart rate at which a fish circulates blood through the body all affect the COHb in the blood, which would in turn affect the COMb. Holeton, in particular teach a concentration of 5% CO was sufficient to form 90% COHb (See Discussion and Summary on Pages 248-253).

19. Therefore, it would have been obvious to achieve the particular levels of CO in the blood, as recited in claims 60-71,or the COHb to COMb ratio as recited in claims 72-77 , since these values (1) the rate at which a fish absorbs the CO into the blood stream via the gills, (2) the heart rate at which a fish circulates

blood through the body, (3) the time a fish is exposed to the CO, and (4) the concentration of CO in the water, since Holeton teaches these variables each affect the COHb and COMb , such as for trout about 5% CO results in 90% COHb at a given temperature and exposure time, while Ishwata et al. teach CO concentrations to maintain a red color during storage include 47-957μg/kg in tilapia and 20-109 μg/kg for tuna.

20. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iimura (JP61141835A) as applied to claims 1-11,14,17,20,24,25,29,82 above further in view of Kowalski (US 5972401).

21. Iimura teaches CO, but is silent in teaching raw smoke. Kowalski, like Iimura also teaches CO to maintain color for fish during storage. Kowalski teaches liquid smoke contains CO. However, Kowalski teaches super-purified smoke is necessary to avoid a smoked flavor in the fish, which can be accomplished in several ways (Column 8, line 55 to Column 11, line 44, Abstract, Column 12, lines 13-29). Therefore, it would have been obvious to modify Iimura and include a smoke since Kowalski also teaches it is effective at maintaining a red fish meat color during storage. It would have been further obvious to use raw smoke since the function of a fish gill is to filter out impurities and absorb gases from water, and a separate purification would not be needed.

22. Claims 93,94,95,96,99,100,102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iimura (JP61141835A) in view of Woodruff et al. (US 4522835).

23. Regarding claims 93,94,99,100,102, Iimura teaches spraying carbon monoxide into a fish tank so that the fish "breathes" the CO before death in order to retain a vivid red color, as recited in claim 99, such that the level of CO is greater than normal and forms both COHb and COMb (Abstract) , but is silent in teaching any particular type of fish or a freezing step followed by a thawing step wherein the color of the thawed fish is the same as fresh fish as recited in claims 93,94,100, and 102.

24. Woodruff et al. teach carbon monoxide is useful to preserve the color of salmon (Abstract, Column 3, lines 41-52) and teaches typical storage is freezing (e.g. either 0-5°F or 29°F to 32°F) and thawing the fish such that the color after thawing is closely approximating the color of fresh fish (Example VII).

25. Therefore, it would have been obvious to modify Iimura and select salmon since Woodruff et al. teach it was known to preserve the color of salmon using CO gas. It would have been further obvious to freeze and subsequently thaw the fish of Iimura since Woodruff et al. teach it is typical to freeze the fish for storage after treating with CO, and after thawing such treated fish is similar in color to fresh fish.

26. Regarding claim 95, although Iimura is silent in teaching the particular time required to expose the live fish, to select any particular exposure time would have been an obvious result effective variable of the time required to form COHb

and COMb , since this would depend on (1) the number of fish in the water, (2) the volume of water, (3) the means of blowing CO into water / the rate of blowing CO into the water (4)the rate at which a fish absorbs the CO into the blood stream via the gills, and (5) the heart rate at which a fish circulates blood through the body, since these variables each affect of COHb and COMb.

27. Regarding claim 96, although limura is silent in teaching the fish dies during exposure to CO, limura teaches oxygen is replaced to form COHb and COMb, which would result in death of the fish.

28. Claims 97,98,101 are rejected under 35 U.S.C. 103(a) as being unpatentable over limura (JP61141835A) in view of Woodruff et al. (US 4522835) as applied to claims 93,94,95,96,99,100,102, further in view of Kowalski (US 5972401).

29. limura teaches CO, but is silent in teaching smoke. Kowalski, like limura also teaches CO to maintain color for fish during storage. Kowalski teaches liquid smoke contains CO and uses super-purified smoke is necessary to avoid a smoked flavor in the fish and freezing the fish at temperatures below –20°F to maintain the product up to one year without losing the color(Column 8, line 55 to Column 11, line 44, Abstract, Column 12, lines 13-29, Column 15, lines 29-51). Therefore, it would have been obvious to modify limura and include a tasteless smoke since Kowalski also teaches it is effective at maintaining a red fish meat color during storage. It would have been further obvious to freeze the products

to at most –20°F since Kowalski teaches this will extend storage to one year without losing the color.

Conclusion

30. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mitsubishi Gas (JP 61185150A) also teaches treating fish in a tank with CO gas (See Abstract and Figure). Morishita (JP 63160564A) teaches CO-treated meat in combination with freezing to preserve color. Kobayshi (JP05003752 A) teaches CO absorption of 4-5l per 100 kg meat for preventing discoloration of tuna. Nimi (JP09149761 A) teaches adding smoke to fish to preserve color.

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Madsen whose telephone number is (571) 272-1402. The examiner can normally be reached on 7:00AM-3:30PM M-F.

32. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on (571) 272-1398. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

33. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Robert Madsen
Examiner
Art Unit 1761

MILTON I. CANO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700